TASK ORDER (TO)

GSQ0014AJ0143
Formerly: GST0012AJ0108 (Option Periods 1 & 2)

FAS OCIO
Database and Application Middleware Server Support

In support of:
General Services Administration
Federal Acquisition Service
Office of the Chief Information Officer

Issued to:
Unisys Corporation

Issued by:
General Services Administration
Federal Systems Integration and Management Center (FEDSIM)
1800 F St NW
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Washington, DC 20405

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FEDSIM Project Number 14067GSM (formerly 12065GSM)

NOTE: The Section numbers in this TO correspond to the Section numbers in the Alliant Contract. Section C of the contractor's Alliant Contract is applicable to this TO and is hereby incorporated by reference. In addition, the following applies:

C.1   BACKGROUND

Database support services for the General Services Administration (GSA), Federal Acquisition Service (FAS), Office of the Chief Information Officer (OCIO) are currently provided in the Metro Washington, DC area, and at the Western Distribution Center in Stockton, CA. The specific characteristics of each facility reflect both FAS systems requirements and historical development. GSA FAS currently owns server, peripheral, and network hardware and software installed in each site, and provides these as Government Furnished Property (GFP) to Contractor personnel who conduct day-to-day operations, systems administration, and technical support.

C.1.1   PURPOSE

The FAS OCIO requires information technology (IT) services to manage, support and modernize its database and application middleware server support. FAS OCIO intends to take advantage of new technologies to better leverage database infrastructure support services such as Database as a Service (DaaS) and Software as a Service (SaaS), and an Information Technology Infrastructure Library (ITIL) management framework across IT services.

FAS' goal is to modernize its IT infrastructure by transitioning to a technical framework that enables rapid response to emerging internet and technology trends and complex Government requirements. FAS also seeks to redesign database infrastructure, leverage contractor owned and implemented robust database, and middleware monitoring tools.

C.1.2   AGENCY MISSION

FAS assists Federal agencies throughout the world to acquire supplies, furniture, computers, tools, and equipment. The products and services offered to these Federal agencies include office equipment and supplies, laboratory equipment, paint, tools, hardware and software, copiers, furniture, vehicles, and an array of service contracts that support other critical requirements (e.g., charge cards and financial management services). FAS Fleet provides vehicle services to Federal agencies, offering a modern fleet and timely replacement of vehicles, lower lease costs, professional maintenance management, and a selection of alternative-fuel vehicles. FAS also helps Federal agencies dispose of items they no longer need by transferring them to other Government agencies or nonprofit organizations or by selling them to the public.

FAS provides best-value services, products, and solutions to customers that increase overall Government effectiveness and efficiency. The FAS OCIO develops and manages applications and systems in support of FAS business lines and staff offices in accordance with policy established by the GSA Chief Information Officer

GSA FAS is organized into four primary business portfolios, six supporting integrator offices, and 11 Regions.

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C.2   SCOPE

The scope of the Database and Application Middleware Server Support requirement is to provide timely and cost efficient support services to stakeholders including core applications such as GSA Advantage and eOffer and their users. The FAS OCIO requires Database support services at FAS locations in the Metro Washington DC area, and at its Western Distribution Center in Stockton, CA.

During the period of performance of this task order, it is the Government's desire to migrate critical database services to technologies that enhance efficiency, are robust, and reliable to serve FAS stakeholders. Database as a Service (DaaS) and "cloud computing" initiatives are two examples of alternate paradigms that can be adapted to meet the dynamic database requirements of the GSA FAS organization and stakeholders. The contractor, as an optional task, shall investigate emerging technologies, industry best practices, and Government regulations and guidelines, and provide recommended solutions and high level migration schedules for the FAS OCIO to consider. Once the Government decides on the best solution, the contractor shall begin to adapt, or migrate the GSA FAS databases to other database platforms that leverage emerging technologies and moves GSA FAS towards a technology solution that offers more efficient capacity utilization. In addition to database support, the contractor shall also manage and maintain (including patching and software upgrades), FAS Application Server (middleware) software components, primarily JBOSS, as well as Tomcat and ColdFusion.

The contractor shall support the database and application server(middleware) support requirements of the FAS business lines and support offices, and the contractor shall provide these services at current levels or better, as determined by the SLRs included in the Section F.8.1, until transition to the selected database solution is complete and accepted by the Government. The contractor's schedule of milestones for transition activities (including all gate reviews and integration testing) shall be provided in the contractor's transition in plan. The contractor shall update transition activities if necessary with close oversight and approval by Government personnel.

C.3   CURRENT INFORMATION TECHNOLOGY (IT)/NETWORK ENVIRONMENT

Currently, FAS leverages various databases to operate and run mission critical business applications, such as GSA Advantage and eOffer. As part of this requirement, the contractor shall be responsible for support these databases, which includes the Sybase database environment, Oracle, MS SQL, and MY SQL. Details of the current environment are provided in Section J Attachment A.

C.4   OBJECTIVE

The objective of the TO is to provide FAS OCIO with Database Services and Application Server support services, also referred to as middleware, while implementing an ITIL management framework. GSA FAS seeks to achieve improved database systems quality, availability, security, integration, and high quality service levels to end-users. FAS seeks to minimize operating costs by leveraging matrix resources for routine administrative tasks (non-dedicated

resources) and in the future migrate to more cost-effective technology platforms, as well as enable existing FAS IT staff to focus on higher "value added" IT management, technology, and program support functions.

GSA FAS intends to leverage the contractor's tools, which shall be provided as a service, to manage, monitor, and maintain FAS production databases and middleware components (these tools should monitor the majority of the Oracle, Sybase and MS SQL production database environments). These tools shall also be leveraged as a method to implement the management framework that GSA FAS requires. GSA FAS seeks to optimize database and middleware monitoring through the use of dashboards that collect and report system alerts real-time for all critical IT assets (production at a minimum), and leverage robust tools to perform automated deployments for some FAS applications. Additionally, GSA FSA intends to implement administration processes, through establishing a Configuration Management Database (CMDB) that includes configuration interactions between databases, middleware, and applications. The CMDB will monitor critical systems that support FAS, as well as monitor key database and Application Server (middleware) components.

GSA FAS seeks to optimize database and middleware monitoring through the use of dashboards that collect and report system alerts real-time for all critical IT assets (production at a minimum), and leverage robust tools to perform automated deployments for some FAS applications.

GSA FAS seeks assistance to evaluate, test, and adapt legacy applications using cost-effective technologies like virtualization, Infrastructure as a Service (Iaas), Database as a Service (Daas) and Platform as a Service (PaaS).

Additional objectives include:
- Ensuring FAS database and middleware components are secure and not vulnerable to security attacks.
- Redesign of the Oracle infrastructure to be highly available, redesign of the FAS Data Warehouse system to be more efficient and highly available, implement database redundancy for GSA Advantage.
- Leveraging critically needed database skills by encouraging knowledge transfer and cross training across FAS database management products, applications, and procedures.

C.5 TASKS

The contractor shall perform the following tasks under the TO:

C.5.1   TASK 1 – PROVIDE PROGRAM MANAGEMENT

The contractor shall provide program management support under this task order. This includes the management and oversight of all activities performed by contractor personnel, including subcontractors (if applicable), to satisfy the requirements identified in this Performance-Based Statement of Work (PBSOW). The contractor shall identify a Program Manager (PM) by name, who shall provide management, direction, administration, quality assurance, and leadership of the execution of this task order.

C.5.1.1   SUBTASK 1 - COORDINATE A PROJECT KICK-OFF MEETING

The contractor shall schedule and coordinate a Project Kick-Off Meeting at the location approved by the Government (in Crystal City, Arlington, VA) no later than 15 calendar days after task order award. The meeting shall provide an introduction between the contractor personnel and Government personnel who will be involved with the task order. The meeting will provide the opportunity to discuss technical, management, and security issues, as well as travel authorization and reporting procedures. At a minimum, the attendees shall include contractor Key Personnel, who shall coordinate with the FEDSIM COR to include all relevant Government personnel. The contractor shall provide the following at the Project Kick-Off meeting:

- Transition-In Plan Overview Briefing
- Completed security package for all contractor Key Personnel

 The contractor shall provide the following within 10 calendar days of the Kick-Off meeting:

- Draft Project Management Plan (including service performance metrics)
- Earned Value Management (EVM) Plan

C.5.1.2   SUBTASK 2 - PREPARE A MONTHLY STATUS REPORT (MSR)

The contractor's Project Manager shall develop and provide a MSR using MS Office Suite applications, by the 15th of each month via electronic mail to the COR and TPOC. The MSR shall include the following:

- Activities during reporting period, by task (include: on-going activities, new activities, activities completed; progress to date on all above mentioned activities). Start each section with a brief description of the task
- Problems and corrective actions taken. Also include issues or concerns and proposed resolutions to address them
- Personnel gains, losses and status (MBI status, etc.)
- Government actions required
- Schedule (show major tasks, milestones, and deliverables; planned and actual start and completion dates for each)
- Summary of trips taken, conferences attended, etc. (attach trip reports to the MSR for reporting period)
- EVM statistics
- Database operational reports
- Accumulated invoiced cost for each CLIN up to the previous month
- Projected cost of each CLIN for the current month
- Comparison data/monthly performance reports

C.5.1.3   SUBTASK 3 - EARNED VALUE MANAGEMENT (EVM) CRITERIA

The contractor shall employ and report on EVM in the management of efforts executed under the Cost Plus Award Fee (CPAF) identified tasks within this task order. See Earned Value Management for the EVM requirements.

C.5.1.4   SUBTASK 4 – CONVENE TECHNICAL STATUS MEETINGS

The contractor Program Manager shall convene a monthly Task Order Activity and Status Meeting with the COR, TPOC, and other Government stakeholders. The purpose of this meeting is to ensure all stakeholders are informed of the monthly activity and status report, provide opportunities to identify other activities and establish priorities, and coordinate resolution of identified problems or opportunities.

The contractor's Program Manager shall provide Technical Status Meeting Minutes to the COR within seven (7) calendar days the status meeting, to include:

- Attendance
- Issues discussed
- Decisions made
- Action items assigned

C.5.1.5   SUBTASK 5 – PREPARE A PROGRAM MANAGEMENT PLAN (PMP)

The contractor shall document all TO support requirements in a PMP. The PMP shall detail Standard Operating Procedures (SOPs) for all tasks. The PMP shall define policies and procedures for managing and directing the effort for productivity, quality, cost control, and early identification and resolution of problems. The PMP shall include milestones, tasks, and subtasks required in the TO. The PMP shall provide for a Work Breakdown Structure (WBS), and associated responsibilities and partnerships between Government organizations by which the contractor shall manage all work. The PMP shall include the contractor's Quality Control Plan (QCP) and EVM Plan.

The contractor shall perform according to the Service Level Requirements identified in the Award Fee Determination Plan (AFDP) and the contractor's Government-approved QCP. The contractor shall document any changes to these documents in the PMP.

The contractor shall provide the Government with an initial Draft PMP with in 10 calendar days of the Project Kick-Off Meeting, on which the Government will make comment. The contractor shall incorporate Government comments and provide a revised PMP to the Government no later than two (2) weeks after receipt of Government comments. The delivery schedule for the PMP and other TO deliverables is provided in Section F of the task order.

C.5.1.6   SUBTASK 6-UPDATE THE PMP

The PMP is an evolutionary document that shall be updated annually. The contractor shall work from the latest Government approved version of the PMP.

C.5.1.7   SUBTASK 7 – PREPARE TRIP REPORTS

The Government will identify the need for a Trip Report (if required) when the request for travel is submitted. The contractor shall keep a summary of all long-distance travel, to include, at a minimum, the name of the employee, location of travel, purpose of trip, trip duration, and POC at the travel location.

Assuming approved funding is available, travel may be required for the purposes of program management, software installation, system maintenance, and technical support. Travel shall be approved in writing by the FAS COR in advance of any travel. Travel times, other than during the standard work week, shall be performed as may reasonably be required for the expeditious rendering of services there under, and shall be performed to the extent such travel is specifically authorized by the FAS TPOC and COR only.

Travel and per diem shall be reimbursed in accordance with FAR 31.205-46, Travel Costs. As applicable, the task order will have a cost-reimbursable line item with a not-to-exceed ceiling amount. It is the Contractor's responsibility to ensure that adequate funds remain on the line item prior to traveling.

Travel is considered to be a requirement for the contractor/subcontractor employee to work at a facility at least 50 miles away from the contractor's primary duty station.

C.5.1.8   SUBTASK 8 – PROVIDE CUSTOMER FEEDBACK SURVEYS

The contractor shall establish and implement a methodology for providing customer feedback. This shall include processes, procedures, and capabilities to assess: customer satisfaction, emerging requirements, and developing trends. The contractor shall also implement processes/procedures and communication media to keep stakeholders and functional proponents informed of the project's status, future plans, and opportunities, including a bi-annual review to ensure that performance meets GSA FAS stakeholder expectations.

C.5.2 TASK 2 – PROVIDE TRANSITION MANAGEMENT SERVICES

The contractor shall implement a transition in methodology contained in their Government-approved Transition-In Plan that is based on the contractor's transition approach presented in their technical proposal to ensure that contractor personnel and subcontractor personnel (if applicable) provide a seamless, risk mitigated, and effective transition. The contractor shall ensure that transition activities do not disrupt FAS services to stakeholders. Transition management services primarily include FAS databases, related database tools and middleware components.

All Transition-in activities shall be completed no later than September 22nd, 2012. The contractor shall provide a single point of contact to verify contractor personnel security packages are complete prior to submission, and expedite communications with the FAS OCIO security POC through transition.

Within the transition-in period, the Government will provide the contractor with necessary Government Furnished Information (GFI) and GFP. During the transition period, the incumbent contractor shall remain responsible for all database sustainment activities until officially relieved by the Government and the new contractor assumes full responsibility. There shall be overlap between the incumbent and new contractor during the transition period.

The transition shall ensure minimum disruption to vital Government business activities. The contractor shall ensure that there will be no service degradation during and after transition. The contractor-developed, detailed Transition-In Plan shall provide for, at a minimum, the following:

- An overview of the transition effort
- An updated (if needed) schedule with milestones and tasks
- Description of systems and GFP to transition
- Transition of GFP/GFI
- Transition knowledge and information from key contractor personnel
- Transition knowledge and information regarding risk or problem areas

The contractor shall provide a Transition-In Plan Overview Briefing at the Project Kick-Off meeting.

C.5.2.1   SUBTASK 1 – TRANSITION-IN PLAN

The Contractor shall deliver a draft Transition-In Plan 10 days after the task order award. The Transition-In Plan shall incorporate a phased approach enabling FAS to maintain continuity of database services throughout the transition. The Contractor shall deliver a Transition-In Plan that addresses the following requirements at a minimum:

- The Transition-In Plan shall identify all project management, procedures and tools to be used to manage the transition
- The Transition-In Plan shall detail the impacts of transition, database/middleware ownership, GFP/space, and a complete detailed schedule for transition, focusing on ensuring business continuity throughout transition
- The Transition-In Plan shall also define contractor's approach to staffing, progress reporting, coordination with third-party providers, and customer education and communication

The final Transition-In Plan shall be delivered to the Government no later than 10 days after the Government provides comments on the Draft Transition-In Plan. The contractor shall coordinate its proposed sequence for transitioning with FAS and shall make adjustments to the sequence, prior to making the Transition-In Plan final. The contractor shall submit the final Transition-In Plan to the GSA FAS Information Systems Security Officer (ISSO) for approval. The contractor shall not proceed with transition without obtaining FAS and ISSO approval of the Transition-In Plan in its entirety or in part. The contractor shall provide integration and testing activities as part of the transition. The contractor shall develop and document an Integration and Testing Plan as part of the Transition-In Plan. The contractor shall manage the integration test environment and conduct integration and security testing for all transitioned components as defined in FAS and Federal security documents that will be provided at the Project Kick-Off Meeting.

For all new transitioned components, the contractor shall evaluate all new and upgraded system components and services for compliance with FAS security rules, regulations and procedures. The contractor shall access and communicate the overall impact and potential risk to system components prior to implementing changes. The contractor shall develop, conduct and document any User Acceptance Testing (UAT) requirements.

C.5.2.2   SUBTASK 2 - PROVIDE TRANSITION OUT SUPPORT

The contractor shall support the Government during transitioning out of the TO. The contractor shall prepare a Transition-Out Plan that details all transition out activities, to include both contractor and Government personnel roles, to ensure that there is a seamless transition to an incoming contractor /Government personnel at the expiration of the task order. The contractor shall provide a Transition-Out Plan no later than (NLT) 90 days prior to expiration of the TO. The contractor's Transition-Out Plan shall identify how the contractor shall coordinate with the incoming contractor and Government personnel to transfer knowledge regarding the following:

- Project management processes
- Points of contact
- Location of technical and project management documentation
- Status of ongoing technical initiatives
- Appropriate contractor to contractor coordination to ensure a seamless transition
- Transition of key personnel roles and responsibilities
- Transfer of any GFI/GFP
- Transfer of any Software Agreements (see Section H.25)
- Identify schedules and milestones
- Identify actions required of the Government

The contractor shall establish and maintain effective communication with the incoming contractor/Government personnel during the transition out period via weekly status meetings or other Government-approved transition communication methodology.

C.5.3 TASK 3 – DATABASE SERVICES

C.5.3.1   SUBTASK 1 - DATABASE AND APPLICATION SERVER ADMINISTRATION

For FAS designated servers, the contractor shall manage and maintain all production and non-production databases, database servers, and application servers. The contractor shall manage, maintain, and administer physical data storage, access, and security in support of FAS databases and application servers. The contractor shall perform database backup and recovery, configure database parameters, and prototype database designs against logical data models. The contractor shall optimize database access and allocate database resources for optimum configuration, database performance and cost. The contractor shall work with GSA FAS to determine the best approaches for database operations and maintenance activities. The contractor shall perform the following functions:

- Operate and maintain FAS designated database and application servers, supporting utilities and third party products
- Perform all required database configuration updates as scheduled and as approved by the FAS TPOC
- Perform all required database backups as scheduled and as approved by the FAS TPOC. These activities shall include:
    1. Set up and administer utilities for backup and recovery, with priority placed on business continuity

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2. Load and unload database server and application server databases
3. Perform test database restores to ensure integrity of system backups

- Schedule, conduct, and synchronize database replication activities
  Monitor and manage databases daily, (Databases are replicated to the COOP site 24x7)
- Be available "on-call" 24 hours per day, 7 days a week to assist in the operation and maintenance of FAS designated databases, database and application servers, and supporting third party products. Onsite support is anticipated between the hours of 6AM to 6PM Monday through Friday. This support must be located within the continental United States.
- Analyze and resolve database and application server problems that may arise
- Perform all required database configuration updates and performance tuning needed for databases to deliver both high response time and high availability; This includes the management, allocation, and control of system resources; Work collaboratively with FAS Application groups to assist with tuning and optimizing SQL code and queries; Proactively monitor SQL statements and stored procedures for performance issues; Tune SQL and stored procedures as appropriate
- Perform database upgrades and changes as scheduled and coordinated by FAS; Document all changes in accordance with FAS approved standards and procedures
- Evaluate new database and application server hardware and software and assist FAS in evaluating and coordinating upgrade and/or replacement of database products
- Ensure databases are performing optimally by checking and monitoring Storage Area Network (SAN) RAID group configurations
- Work collaboratively with other teams to assess the performance of the Storage Area Network (SAN)
- Leverage the sophisticated capabilities of the Storage Area Network, in particular capabilities such as SAN Mirroring technology, SAN cloning technology and block-level replication (i.e. SRDF/A, RecoverPoint etc.)
- Optimize database access and allocate database resources for optimum configuration, database performance and cost
- Assist in the preparation of capacity plans and analysis of database and application server performance improvements
- Develop, implement and lead, where appropriate, Disaster Recovery (DR) and Continuity of Operations (COOP) planning and testing activities for production and non-production databases. DR and COOP testing shall be conducted every six months at a minimum
- Implement database security procedures and requirements and assist in implementing application and infrastructure security as required and as directed by the FAS TPOC
- Document all database, database server, and application server actions in a manner consistent with:
  1. FAS standards and procedures
  2. FAS systems life cycles and change management procedures
  3. Industry-leading best practices

C.5.3.2   SUBTASK 2 - DATABASE AND APPLICATION SERVER TECHNICAL ARCHITECTURE SERVICES

The contractor shall play a lead role designing and optimizing FAS databases, database and application server platforms, and supporting infrastructure products. The contractor shall

provide input and recommendations into the formulation of enterprise level information capture, access, storage, and security as it relates to databases and application servers. The contractor shall recommend standards and define data repository, data dictionary, and data warehousing requirements.

At a minimum the contractor shall meet service levels defined in the AFDP and recommend service levels for exceeding the AFDP. In this role, the contractor shall recommend service levels and performance management procedures and metrics, data designs and balance/optimize data access, batch processing, and resource utilization across FAS and its many applications. The contractor shall design and construct data architectures, operational data stores, and data marts for particularly complex applications. The contractor shall recommend data modeling and database design methods and standards and shall implement improvements as directed by the FAS TPOC.

At a minimum, the contractor shall provide the following services:

- Oversee and direct database administration activities as specified in C.5.3.
  1. Ensure all database administration conforms to FAS approved methodologies, procedures, and best practices.
- Recommend strategies, methodologies, and plans to enable FAS to optimize its database server, data warehouse and application server infrastructure. Key activities include:
  1. Survey new database and application server technologies and make timely recommendations of new products/releases that may benefit FAS
  2. Analyze and recommend specific database and application server products and techniques to be used in support of complex applications
  3. Develop strategies to optimize FAS-wide database and application server infrastructure
  4. Draft and recommend standards for data input, retrieval, transmission, and storage (e.g., to include interaction with and consideration of GSA Storage Area Networks (SANs))
  5. Conduct benchmarks, as appropriate, to assess database performance
  6. On an enterprise basis, allocate database resources for optimum configuration, database access, and database performance and cost
  7. Provide SQL tuning and development expertise
- Ensure database parameters are tuned and optimized for FAS's complex, high transaction environment.
- Recommend improvements to database standards and practices. Key activities include:
  1. Update and refine configuration management tools and procedures
  2. Recommend data architecture standards, policies and procedures, and refinements to database deployment methodology, as needed
  3. Evaluate and recommend database, application, server, and enterprise security standards
  4. Evaluate and recommend standards and procedures guiding database backup and recovery, configuration of database parameters, and prototyping designs against logical data models
  5. Evaluate and recommend standards and design of physical data storage, maintenance, and access, to include configuration and analysis of SAN RAID group technologies

6. Review and recommend improvements to IT tools supporting database problem tracking and change management
7. Draft and recommend checklists to guide database design reviews, implementation planning, and database recovery exercises

- Adhere to service levels, metrics, performance measurement techniques, and performance reporting requirements as mandated by FAS TPOC and as defined in the AFDP. Key activities include:
    1. Meet or exceed overall performance objectives for FAS database services
    2. Meet or exceed service levels for all database and database / application server support tasks
    3. Compile initial service level performance results
    4. Report individual database / server performance
    5. Report root cause analysis of performance problems and recommend improvements
    6. Develop and implement customer satisfaction surveys to assess database effectiveness in support of customer applications
- For large, complex projects, assist FAS database, applications, and IT infrastructure staff to develop effective database designs, balancing optimization of database access with database loading and resource utilization factors in development, test and production environments. Assist implementation through all phases of the system development life cycle.
- Provide senior database leadership, coaching, and mentoring to FAS IT staff and contractors. Develop reports and presentations for senior management, as needed for the architectural recommendations described in this subtask.

C.5.3.3   SUBTASK 3 - PROVIDE DATABASE OPERATIONS AND ADMINISTRATION

FAS has implemented four database server environments, four application server environments, and various programming languages and third party products to meet FAS requirements. FAS maintains production and non-production database environments. FAS has a production, COOP, Test and Development infrastructure. Additional environments such as pre-production may emerge in the future. The contractor shall provide operations and administration for the environments described below.

SYBASE SUPPORT

FAS has implemented the following Sybase RDBMS products. The contractor shall be responsible for managing, maintaining, upgrading, patching, and ensuring operational continuity of the following Sybase components:

- Sybase Adaptive Server Enterprise (ASE) is a high-performance relational database management system for mission-critical, data-intensive environments. It ensures highest operational efficiency and throughput on a broad range of platforms.
- Sybase Replication Server provides transactional database replication between ASE server instances, and guarantees zero operational downtime of the database.
- Sybase Open Switch is a continuous availability solution.   Sybase OpenSwitch ensures continuous availability to systems with no configuration changes and no need for clients

to reconnect. OpenSwitch transparently routes requests from a primary database system to a back-up database system without disruption in service.

- Sybase Open Switch is a continuous availability solution. Sybase OpenSwitch ensures continuous availability of systems with no configuration changes and no need for clients to reconnect. OpenSwitch transparently routes requests from a primary database system to a back-up database system without disruption in service.
- Sybase IQ is a data warehouse system used by FAS. The data warehouse system is leveraged by the FAS Business Intelligence team to run ad hoc and canned reports against the FAS Enterprise Data Mart. The application used for this function is Business Objects. Extract Transform and Load (ETL) tools are used to load data into Sybase IQ. Support for the Business Objects COTS package and ancillary components in not within the scope of this TO. The contractor shall be responsible for managing all aspects of Sybase IQ, and shall assist the application team(s) with ETL functions.
- Sybase Open Client is a versatile programming interface allowing transparent access to any data source, information application or system service.
- Sybase Database, Replication, and Application Servers are specified in Section J (Attachment A). The FAS applications supported by Sybase are specified in Section J (Attachment A).
- FAS has one application known as FSS On-line, which runs in PowerBuilder. The contractor shall be expected to support and manage Powerbuilder client licenses on select Developer desktops. FAS anticipates migrating away from Powerbuilder during the task order period of performance.

ORACLE SUPPORT

FAS has implemented Oracle in support of mission-critical applications and commercial off the shelf (COTS) software. The contractor shall be responsible for managing, maintaining, patching, upgrading and ensuring operational continuity of the Oracle (DBMS) and associated components. FAS has implemented the following Oracle products:

- Oracle OEM/Grid Control is Oracle's single, integrated solution for managing all aspects of the Oracle database and the applications running on it. Grid Control will be provided by the Government.
- Oracle Data Guard ensures high availability, data protection, and disaster recovery for enterprise data. Data Guard ensures that standby databases are transactionally consistent copies of the production database. FAS leverages Data Guard for its Production environment to replicate transactions from its primary database to the secondary database.
- The contractor shall support Oracle Streams technology. While FAS does not leverage this currently, it is anticipated that FAS will use Oracle Streams beginning in option year one.
- FAS leverages Oracle SQL Developer to allow developers to browse database objects, run SQL statements and SQL scripts, edit and debug PL/SQL statements, manipulate and export data, and view and create reports.

- The contractor shall be responsible for supporting Oracle Real Application Clusters (RAC). Oracle RAC provides a highly available, scalable and manageable solution by sharing complete access to a single database among nodes in a cluster. FAS anticipates leveraging the capabilities of Oracle RAC in the future.
- Oracle Recovery manager RMAN is a platform independent utility for coordinating backups and restore procedures across multiple FAS servers. FAS uses RMAN to perform incremental and full database backups.

Oracle Database Servers are specified in Section J (Attachment A). The FAS applications supported by Oracle are specified in Section J (Attachment A). The contractor shall be responsible for the Oracle database environment to include any necessary migrations, updates, and patches.

MS SQL SERVER SUPPORT

FAS has implemented MS SQL Server to support certain individual and departmental applications. The contractor shall be responsible for managing, maintaining, patching, upgrading and ensuring operational continuity of MS SQL and associated components. FAS has implemented the following MS SQL products:

- FAS leverages Microsoft Management Console (MMC) for managing different server applications in a Microsoft Windows network.
- The contractor shall ensure high-availability for select MS SQL Database instances, especially for the Sharpe Warehouse.
- The contract shall support, manage, maintain, patch and upgrade all MS SQL server instances at the Sharpe Warehouse and ensure operational continuity.
- The contractor shall support the Sharpe Development team with SQL tuning activities.
- SQL Server Enterprise Manager is the primary administrative tool for SQL Server and provides an MMC-compliant user interface that allows users to:
    1. Define groups of SQL Server instances
    2. Register individual servers in a group
    3. Configure all SQL Server options for each registered serve.
    4. Create and administer all SQL Server databases, objects, logins, users, and permissions in each registered server
    5. Define and execute all SQL Server administrative tasks on each registered serve.
    6. Design and test SQL statements, batches, and scripts interactively by invoking SQL Query Analyzer
    7. Invoke the various wizards defined for SQL Server
- FAS uses MS SQL database mirroring to transfer transaction log records directly from one server to another. This enables FAS to quickly fail over to the standby server.

FAS's MS SQL server environment and MS SQL databases profiled in Section J (Attachment A). The FAS applications supported by MS SQL are specified in Section J (Attachment A). The contractor shall be responsible for the MS SQL database environment to include any necessary migrations, updates, and patches.

MySQL SERVER SUPPORT

FAS has implemented MySQL Server to support certain individual and departmental applications. The contractor shall be responsible for managing, maintaining, patching, upgrading and ensuring operational continuity of MS SQL and associated components. FAS has implemented the following MySQL products:

MySQL Workbench provides DBAs and developers an integrated tools environment for:
1. Database Design & Modeling
2. SQL Development (replacing MySQL Query Browser)
3. Database Administration (replacing MySQL Administrator)

FAS's MySQL server environment and MySQL databases are profiled in Section J (Attachment A). The FAS applications supported by MySQL are specified in Section J (Attachment A). The contractor shall be responsible for the MySQL database environment to include any necessary migrations, updates, and patches.

APPLICATION SERVER SUPPORT

For FAS designated servers, the contractor shall manage, maintain, and operate all production and non-production application servers. The contractor shall upgrade, patch, and secure production and non-production application servers. FAS has currently implemented JBOSS as the primary application server environments. FAS also uses ColdFusion and Tomcat for some small-scale applications. The contractor shall be responsible for supporting some instances of Tomcat and Cold Fusion. Both integrate with Apache as the web server for these applications. The contractor will be required to support the current application server environment, and will continue to have this responsibility while under contract regardless of the specific technologies that may be in place in the future application server environment. The contractor shall be responsible for JBOSS clustering support.

PROGRAMMING LANGUAGES AND THIRD PARTY PRODUCTS

FAS has implemented programming languages and third party tools, identified in Section J (Attachment A) to meet many of its application programming needs. FAS intends to utilize the TOOLs CLIN to procure maintenance and updates for these items.

SERVER ENVIRONMENTS

FAS databases, database servers, and application servers are hosted on servers located in FAS facilities or at FAS managed external data center facilities. FAS production databases are hosted at contractor owned facilities in Sterling, VA, Chicago, IL and Stockton, CA. Test, Development and Lab databases are hosted at FAS's Crystal City data center. A few database instances, primarily MS SQL, are hosted at FAS owned facilities throughout FAS's 10 regions. FAS has a separate contract for hosting support, system support and server administration.

FAS has recently consolidated production, test and development databases onto several Sun Oracle M Class servers. FAS databases run on a Solaris 10 platform using Zones on a

Sun/Oracle M Class server. Databases supporting major applications (i,e. GSAAdvantage, ECMS, etc.) are architected to operate in separate zones and are not shared with other applications, Production databases are replicated from the primary site (Sterling, VA) to the COOP site (Chicago, IL) using Sybase Replication server. FAS databases are architected using a "warm standby" configuration. The FAS data warehouse, which leverages Sybase IQ, is replicated at the block level using EMC's RecoverPoint appliance.

FAS also leverages Sybase Openswitch to provide transparent database failover for applications. FAS applications access the databases via Openswitch, which directs client applications to the active database.

The FAS Oracle infrastructure is replicated using Oracle Dataguard. Dataguard replicates from the primary site to the secondary (COOP) site. In some cases, FAS uses block-level replication for some databases. The EMC RecoverPoint appliance is used for block-level replication. FAS has implemented three types of operating systems to support FAS applications and databases:

- Unix servers M8000 and M5000, operating under Solaris 10 – Sybase ASE, Oracle, Sybase IQ
    1. The major application using Sybase is GSA Advantage. Other applications within FAS also leverage the Sybase database. All new applications are being written to use Oracle. Sybase is primarily used for legacy applications.
    2. Sybase IQ is used by primarily by FAS Business Intelligence tools, in particular, Business Objects, and some GSA Advantage applications.
    3. Oracle is used for all new development efforts. FAS leverages Oracle for EAS (Enterprise Acquisition System), ECMS (Document Digitization System).
- Windows servers
    1. FAS uses MS SQL for its Western Distribution Center (Sharpe Warehouse). MS SQL supports the High Jump and Tompkins applications, which operate the warehouse. The Quality Center application also uses MS SQL.
- Linux servers – Sybase database
    1. Eoffer Esign databases run on a Linux platform.
- JBOSS
    1. Application teams self-deploy code to Development and Test environments by placing code in a specific directory. Production code deployments are coordinated by the application teams and code is fielded to Production manually by FAS staff. FAS Staff attend weekly deployment meetings.
    2. JBOSS instances are clustered for high availability for most major applications.
    3. ColdFusion is used on Windows servers for small scale intranet and internet applications. There are three production servers (two in Crystal City) and one COOP server. There are also several non-production servers. The contractor shall support, patch, upgrade and maintain Cold Fusion on FAS production and non-production servers.
- Tomcat

1. Tomcat is used by many FAS applications. The majority of the instances are installed and administered by the application owner(s). Tomcat is leveraged by several major applications such as eOffer and ECMS leverage Tomcat. The contractor shall manage the Tomcat instances for eOffer and ECMS, at a minimum.

C.5.3.4   SUBTASK 4 - DATABASE APPLICATION PERFORMANCE, TUNING AND MONITORING

The contractor shall provide robust metrics for tuning to ensure optimal performance of the database environment. The contractor shall provide all necessary tools to capture database metrics and SQL metrics. The tools shall be capable of measuring performance from middleware components thru to the database. These tools shall be provided as a service to FAS.

At a minimum, the contractor shall provide the following services:

- Provide relational database design assistance on table structures, primary key/foreign key, and indices with a focus on improving performance of stored procedures, functions and triggers.
- Review and monitor system and instance resources to ensure continuous database operations (i.e., database storage, memory, CPU, network usage, and I/O contention).
- Develop and maintain a structured query language (SQL) execution plan (how data flows between primitive operations) using query analyzing tools then perform detailed cost analysis.
- Set up page size/tablespace/index parameters based on the database environment in order to minimize disk access bottlenecks and other challenges.
- Conduct performance issue troubleshooting and tuning for SQL statements, stored procedures, functions, and triggers for the database.
- Perform application tuning and monitoring.
- Inspect and fix the order of SQL execution statements to reduce incidents of inefficient memory usage.
- Allocate current system storage and plan future storage requirements for the database.
- Provide recommendations for the SAN environment.
- Monitor and tune I/O activities, CPU usage, and memory usage to provide recommendations for efficient and effective performance.
- Optimize database configuration files to improve SQL statements' efficiency and prevent deadlock, hung processes, and other performance related issues.
- Apply wait-time-based performance methodology to enable administrators to respond before wait-time errors create end-user service failures or additional SQL tuning complications.
- Recommend and perform database backup and consistency check best practices to avoid interference with routine application processes.
- Perform setting and tuning of system parameters so that the operating system, network and transaction processors are efficiently working with the database.
- Assist with impact analysis of any changes made to database objects.

- Optimize database disk space usage by leveraging sophisticated SAN based technologies.
- Ensure database backups complete in a timely manner and are optimized for performance.
- Leverage SAN based technologies to optimize database backups.
- Tools shall be provided that allow performance to be measured from the middleware tier to the database, including the amount of time required to commit transactions.
- The monitoring tool shall provide ad hoc reporting and a dashboard view of performance metrics for key applications.
- Monitoring tools shall provide SQL execution times for stored procedures.
- Monitoring tools shall monitor all critical functions related to database performance and availability.
- The monitoring tools shall monitor logs for critical errors (i.e. Oracle Alert log, disk space, replication queues).
- The monitoring tools shall provide execution plan and recommendation for long running SQL statements.
- The monitoring tools shall provide IO, CPU and memory usages history.
- The monitoring tools shall monitor current and past top SQL activities and sessions and shall identify locked table/sessions.
- Auditing tool shall be provided to track Data Manipulation Language (DML) and Data Definition Language (DDL) statements on objects and structures in a database.
- Auditing tools shall be provided to track for users' privileges.

C.5.3.5   SUBTASK 5 - DATABASE APPLICATION DEVELOPMENT SUPPORT

The contractor shall provide database support to applications development during all phases of the system development life cycle including business analysis, requirements definition, system design, data acquisition, system development, test, implementation, and maintenance. The contractor shall assist in the gathering, analysis, and normalization of relevant information related to business processes, functions, and operations in order to optimize both database and application systems effectiveness. In support of applications development, the contractor shall provide input and recommend data architecture standards and policies and procedures that support both FAS database administration and the applications development process.
At a minimum, the contractor shall provide the following services:

- Provide database programming support and guidance to application developers. At a minimum, this support shall include:
  1. Provide guidance on how to make best use of database products as components of applications development
  2. Assist with programming stored procedures in support of secure information access requirements
  3. Assist with programming complex end user database queries and report output to meet user needs
  4. Implement, maintain, and update data dictionary capabilities to assure all system data is specified and controlled

5. Assist in all phases of database and applications testing -- functional, operational, and stress testing

- Devise or modify procedures to solve problems considering database impact on computer equipment capacity, operating schedule, form of desired results, and integration of components
- Proactively analyze existing applications to identify database weaknesses and develop solutions for improvement
- Provide data modeling support and guidance to application developers. At a minimum, this support shall include:
  1. Analyze and develop complex logical database designs, logical data models and relational data definitions in support of agency and customer information systems requirements
  2. Apply data analysis methodologies and tools that depict the flow of data within and between technology systems and business functions /operations
  3. Identify and resolve information flow, content issues and the transformation of business requirements into logical data models
  4. Identify opportunities to reduce data redundancy
- In support of application development, recommend development of new databases or reuse of existing database and the specific database and application server products that best support them (e.g. Sybase vs. Oracle vs. MS SQL Server vs. MySQL)
- Identify best sources of data feeds and interfaces to ensure feasibility and consistency with current FAS databases
- Define, develop or modify database data structures by applying FAS approved development, configuration management, and change control processes. Assure all changes are documented consistent with FAS standards and procedures and best professional practice
- Recommend approaches for database data loads and conversions in support of application implementations
- Implement database updates in accordance with FAS configuration management and change control procedures and professional best practices
- Support maintenance of applications, as needed
- Adhere to FAS quality standards and procedures for reviewing database (Ensuring compliance with FAS application architecture and database standards)
- Assist in defining and updating database and applications development guidelines and standards to reflect database best practices
- Document changes to database architecture, integration and conversion plans. Develop and maintain database architecture diagrams

C.5.3.6   SUBTASK 6 - APPLICATION PROGRAMMING SERVICES

Using the products which are specified in Section J (Attachment A), Programming Languages and Third Party Products, the contractor shall provide application and maintenance services in support of individual applications as designated by the FAS TPOC. Additionally, the contractor shall provide applications development guidance, suggested procedures, and best practices to

help guide use of Java J2EE in support of FAS Internet applications. The contractor shall deliver the following application programming services:

- Provide application support, maintain, test and assist with integrating designated applications using FAS designated programming languages
- Provide application maintenance support to FAS's Web DBA application using Java J2EE
- Draft Java J2EE programming and development methodologies and procedures as well as standards for programming architectures and application code / component reuse
- Apply object-oriented approaches in designing, coding, testing and debugging programs Understand and consistently apply the attributes and processes of current application development methodologies
- Research and maintain knowledge in emerging application development technologies, particularly for Java J2EE, and recommend opportunities for implementation at FAS
- Act as an internal consultant, advocate, mentor and change agent for introducing new application development technologies

C.5.3.7   SUBTASK 7 - LEVEL 2 SUPPORT

For the services and IT products specified above in Task 3: Database Services the contractor shall deliver Level 2 Support to solve FAS database and application software issues and/or requests of information. FAS averages 600 tickets on a yearly basis.

The contractor shall analyze and resolve database and middleware software issues and technical problems. Timely, courteous, and competent response to customers is of paramount importance. The contractor shall deliver the following Level 2 support Services:

- Answer all customer questions pertaining to problem resolution and requests for additional information for databases, database and application servers, and supporting products
- Monitor all database and middleware components 24x7 and ensure databases are replicated and synchronized 24x7
- Log, track, respond and resolve customer database support issues using the CA-Unicenter Helpdesk tool
- Analyze and resolve database problems that arise in the production and non-production environments
- Investigate and/or resolve problems over the phone or by going to a customer desk
- Gain management approval for problem correction prior to transfer to production
- Follow Help Desk policy and procedures regarding problem logging, status updates, and corrections
- Identify and analyze problems that indicate systemic problems and recommend solutions for the problems

C.5.3.8   SUBTASK 8 - SYSTEM ANALYSIS, DEVELOPMENT, IMPLEMENTATION AND MANAGEMENT SUPPORT

The Contractor shall provide product expertise and leadership to manage and implement new/existing systems for all the HR/FM applications and their supporting processes. Activities shall include technical project management support, task planning support, development of technical requirements for hardware, software and application environments, system configuration changes, deployment efforts, day-to-day operations and maintenance efforts, technical training, testing, and technical support for major system changes.

SECURE TRANSFER SERVICES PLATFORM SUPPORT
The Contractor shall assist in the deployment, operations, and management of the Secure Transfer Services (STS) platform in the OCIO MultiNet. The Contractor shall provide assistance with the following:

- Facilitate new and existing customer file transfer connections to the platform
- Coordinate with network engineers for new customer configurations (firewall openings / routing)
- Assist application developers in deploying scripts, configuring CRON entries, and administering OS permission changes
- Assist in the operations and maintenance of cluster environment
- Assist in the development of scripts to automate file transfers using technologies such as File Transfer Protocol (FTP), Secure File Transfer Protocol (SFTP), and Secure Copy (SCP)
- Provide process improvement and platform recommendations as requested

IIS PLATFORM SUPPORT
The Contractor shall lead the deployment, operations, and management efforts for the Microsoft IIS platform in MultiNet. The Contractor shall also assist with various Government, GSA, and OCIO-wide Web delivery implementations as it pertains to the IIS platform. The Contractor shall support the IIS platform through upgrades to the environment, security patches, deployment of new applications, and troubleshooting platform issues.

PROCESS SCHEDULING AND AUTOMATION PLATFORM (VISUAL CRON) SUPPORT
The Contractor shall assist in the deployment, operations, and maintenance of the Process Scheduling and Automation Platform (Visual Cron) in the OCIO MultiNet. The Contractor shall perform the following:

- Provide services to install, configure, and manage the software in support of the platform
- Provide software upgrade/maintenance services to the platform
- Provide support for development and integration activities leveraging the platform
- Provide migration services from legacy platforms to the active platforms
- Coordinate required networking and active directory integration changes to support the platforms

DATABASE ADMINISTRATION SUPPORT

The Contractor shall perform enterprise-level database administration (DBA) activities in accordance with the DBAMS contract. This includes the running of SQL and or PL/SQL scripts for the creation and maintenance of data, database objects, users, roles, tablespaces, and file maintenance.

- Provide database design assistance and support to development teams.
- Provide consultation for a wide range of technical and management issues (database, operating systems, analysis and design methodologies, etc.).
- Provide services to support application tuning/performance enhancement, application architecture, hardware architecture, tools evaluation, and enterprise DBA activities.
- Provide database and user administration support during core business hours and as needed.
- Install and manage Oracle software. This includes resolution of problems which arise during the configuration of the database management system (DBMS). This also includes the installation of Oracle software upgrades and patches.
- Manage and monitor database storage. The Contractor shall establish and enforce database security to ensure only authorized users have access to the data.
- Implement an appropriate database backup and recovery strategy based on data volatility and application availability requirements as well as industry best practices.
- Monitor daily backup jobs for success or failure and take corrective action.
- Provide direction and advice for database design and development.
- Move/relocate database(s) to new/different servers as needed.
- Provide database administration support to GSA applications located at GSA locations.
- Install and configure Oracle Enterprise Manager (OEM) and monitor databases to ensure data availability using non-disruptive administration tactics.
- Develop a variety of technical and administrative documentation.
- Develop and execute Continuity of Operations Plans (COOP) and develop/update standards and procedures.
- Act as a database administration technical expert and advisor in meetings as directed by the government. This task may involve formal presentations of technical matters.
- The Contractor shall assess, analyze, and make recommendations for the incorporation of new hardware, software, and procedures into the GSA database server environment.
- Participate in performance testing.
- Tune the database for improved/optimal performance as well as maintain current database code and procedures.
- Proactively monitor the database environment and coordinate changes with the development team to optimize performance.
- Participate in testing applications for the purpose of performance.
- Provide written analysis and observations from monitoring the testing. The Contractor shall install the recommended Oracle security patches at quarterly intervals, create and manage database schemas, and startup and shutdown the database instance.

VITAP AND OTHER FINANCIAL PLATFORM SUPPORT

The Contractor shall support VITAP applications and other financial systems, including Oracle database development and deployment, FoxPro implementation, audit support, troubleshooting and providing resolution to developers etc.

BUSINESS OBJECTS PLATFORM SUPPORT

The Contractor shall support the OCFO Business Objects platform, including Oracle database development and deployment, FoxPro migration to Business Objects, audit support, troubleshooting and providing resolution to developers etc.

FOXPRO SUPPORT

The Contractor shall support FoxPro applications.

C.5.4 TASK 4 – PROVIDE CROSS FUNCTIONAL LIFE-CYCLE SERVICES

In conjunction with the database services listed above, the contractor shall provide life-cycle technical support to FAS business owners and applications teams for all databases, database services and middleware software. The contractor shall adhere to ITIL v3.0 best practices in performing work under all the defined tasks. These cross functional life-cycle activities include, but are not limited to the following:

- Ensure compliance with FAS policies, standards and regulations applicable to information, information systems, personnel, physical and technical security
- Develop and maintain a comprehensive Standards and Procedures Manual that contains the standards and procedures that will be used in the delivery of all database services
- Conform to changes in laws, regulations and policies
- Major service changes shall be proposed on a project-by-project effort basis to alter the environment to conform to the new requirements
- Report performance monthly against Service Level Requirements
- Provide timely creation, updating, maintenance and provision of all appropriate project plans, project time and cost estimates, technical specifications, management documentation and management reporting in a form/format that is acceptable to FAS for all database services projects and major service activities (e.g., Availability Management, Capacity Management, Incident Management, etc.)

C.5.4.1   SUBTASK 1 - PLANNING AND ANALYSIS

The contractor shall provide planning and analysis associated with researching new technical trends, products, and services as related to databases and information management activities. FAS Planning and Analysis Services can also mitigate risks by reducing defects and improving the quality of database services.

The contractor's responsibilities include, but are not limited to the following:

- Participate in defining services and standards for Planning and Analysis activities

- Perform technical and Service Planning and Analysis based on FAS requirements (e.g., availability, capacity, performance, backup and Continuity and Disaster Recovery Services)
- Provide recommendations for new databases and data management services based on Planning and Analysis results
- Continuously monitor database and data management trends through independent research; document and report on products and services with potential use for FAS as they align with the FAS business and technology strategies
- Perform feasibility studies for the implementation of new database technologies that best meet FAS business needs and meet cost, performance and quality objectives
- Adhere to FAS project and SDLC requirements using contractor's project management capabilities
- Perform project management function for contractor-managed projects as requested by FAS
- Participate in technical and business planning sessions to establish standards, architecture, and project initiatives
- Conduct regular planning for database technology refreshes and upgrades; and
- Conduct technical reviews and provide recommendations for improvements that increase efficiency and effectiveness and reduce costs per the Planning and Analysis results

C.5.4.2   SUBTASK 2 - REQUIREMENTS DEFINITION

The contractor shall provide requirements definition services associated with the assessment and definition of functional, performance, IT Disaster Recovery (DR) and Continuity of Operations (COOP), and security requirements that also comply with regulatory and GSA FAS policies. These requirements drive the technical design for the FAS environment. The contractor shall participate in defining requirements and standards, including appropriate requirements-gathering activities (e.g., focus groups, interviews). The contractor shall document requirements required to deliver services in agreed-to formats (e.g., data models, upgrade data requirements, transition requirements, etc.). The contractor shall ensure these requirements meet GSA-specific and Federal security policies. The contractor shall also define acceptance test criteria for approval.

C.5.4.3   SUBTASK 3 - DESIGN SPECIFICATIONS

The contractor shall provide design specification services associated with translating user and information system requirements into detailed technical specifications. The contractor shall develop, document, and maintain Technical Design Plans and environment configurations based on FAS design specifications, standards and requirements, including architecture, functional, performance, availability, maintainability, security and IT continuity, and disaster recovery requirements. The contractor shall determine and document required component upgrades, replacements and/or transition specifications (e.g., hardware, software, networks). The contractor shall conduct site surveys for design efforts and document and deliver design specifications in a Design Specifications Document. The delivery dates of the Technical Design Plans and Design Specifications Document shall be updated in the contractor's PMP.

C.5.4.4   SUBTASK 4 - ASSET MANAGEMENT

The contractor shall provide asset management services associated with ongoing management and tracking of new and upgraded database components in the asset management system. The contractor's responsibilities include, but are not limited to the following:

- Manage life cycle of all database and database-related assets from requisition ordering, inventory, installation to disposal
- Manage life cycle of all application server and application server-related assets from requisition ordering, inventory, installation to disposal
- For GFP(software), provide data to Asset Management team for entry into Asset Management system in order to maintain, update, track and report all in-scope assets throughout the asset life cycle (installation to disposal/retirement)
- For contractor-owned software, provide data to Asset Management team for entry into Asset Management system in order to maintain, update, track and report all in-scope assets throughout the asset life cycle (installation to disposal/retirement)
- For GFP and Contractor-owned software, asset information that would be provided to the Asset Management system may include:
  1. Manufacturer
  2. Serial number
  3. Asset identification number
  4. Asset location
  5. Ownership information (vendor/FAS—lease/purchase)
  6. Asset cost information
  7. Maintenance information and history including the age of the Asset
  8. Other billing information (e.g., lease information, FAS-specific information)
  9. Transaction edit history (e.g., locations, billing and user)
- Provide updates to asset management team for in-scope asset records related to all change activities (e.g., Install/move/add/change activities, break/fix activities, company reorganization and change management)
- For contractor-owned software, perform ongoing physical Asset audit, in accordance with Asset Management Service Level Requirements, to validate that data in the Asset Management system is accurate and current and FAS has information required for internal chargeback systems
- For contractor-owned software, provide reports of Asset Management audit results
- For GFP and contractor-owned software, provide and implement, upon FAS approval, an Asset Management Remediation Plan for Asset Management deficiencies

C.5.4.5   SUBTASK 5 – DATABASE AND APPLICATION SERVER LICENSE MANAGEMENT

The contractor shall provide database and application server license management services associated with the acquisition and ongoing management and tracking of database licenses. The contractor's responsibilities include, but are not limited to, the following:

- Document, and maintain software license management procedures that meet requirements and adhere to defined policies
- Develop and maintain inventory of all database, application server, and database tool licenses
- Report to FAS on any exceptions to vendor terms and conditions
- Coordinate database and application server license and maintenance agreement reviews, allowing for sufficient time prior to expiration for negotiations
- Provide FAS with reports and recommendations to use in making database and application server acquisition and discontinuance decisions
- Provide recommendations to purchase additional license capacity, recommending alternatives, or curtailing usage where necessary and appropriate, to restore, or continue to maintain, license compliance
- Identify and report license compliance issues
- Manage and perform audits and reconcile the number of licenses to the number of installs
- Obtain approval from FAS for any license change or replacement

C.5.4.6 SUBTASK 6 - TRAINING AND KNOWLEDGE TRANSFER

The contractor shall provide training and knowledge transfer services, including training for the improvement of skills through education for contractor employees on unique FAS systems and software. The contractor shall participate in any mandatory, initial, and ongoing training provided by FAS as required that would provide a learning opportunity about the business and technical environment.

The contractor shall develop, document, and maintain in the Standards and Procedures Manual training and knowledge transfer procedures that meet requirements and adhere to defined policies. The training program shall instruct FAS personnel on the provisioning of contractor services (e.g., "rules of engagement," requesting services, processes). The contractor shall develop, implement, and maintain a FAS-accessible knowledge database/portal. The contractor shall develop and implement knowledge transfer procedures to ensure that more than one individual understands key components of the business and technical environment. The contractor shall participate in FAS-delivered instruction on the business and technical environment.

The contractor shall provide brown bags on new database technologies, SQL tuning and other areas. The brown bag training sessions will be for Government and Contractor personnel, training will be informal on an approximately quarterly basis.

C.5.4.7 SUBTASK 7 – MAINTENANCE AND BREAK/FIX SUPPORT

The contractor shall provide maintenance services associated with the maintenance and repair of FAS databases and middleware components. Break/Fix activities are required for Sybase,Oracle, MS SQL, MySQL, and FAS Middleware components.

The contractor's maintenance and break/fix support responsibilities include, but are not limited to, the following:

- Develop, document, and maintain any management tools, including maintenance procedures The Government requires that management tools be provided as a service. The contractor shall provide all support and maintenance associated with the tools.
- Develop maintenance schedules
- Ensure appropriate maintenance coverage for all database components
- For GFP and contractor-owned software, provide access to required software by Break/Fix personnel
- For GFP and contractor-owned software, perform diagnostics and maintenance on database components including software and special-purpose devices as appropriate
- For GFP and contractor-owned software, install manufacturer field change orders, service packs, firmware and software maintenance releases, etc.
- For GFP and contractor-owned software, perform product patch, "bug fix," service pack installation or upgrades to the current installed version
- For GFP and contractor-owned software, perform maintenance-related software distribution and version control, both electronic and manual
- Repair GFP and contractor-owned software defects, including preventive maintenance, according to the manufacturer's published mean-time-between failure rates
- For GFP and contractor-owned software, conduct maintenance and parts management and monitoring during warranty and off-warranty periods

The Government will maintain maintenance and support for all software components that are considered GFP.

C.5.4.8 SUBTASK 8 - AVAILABILITY MANAGEMENT

The contractor shall provide availability management services to assist FAS to plan, measure, and monitor availability of the databases and supporting database services organization. Availability management seeks to achieve, over a period of time, a reduction in the frequency and duration of incidents that impact availability. The contractor shall continuously strive to improve availability to ensure the requirements are met consistently. Availability management includes the evaluation, design, implementation, measurement, and management of the database availability from a component and an end-to-end perspective; including new or modified database management methodologies and tools, as well as technology modifications or upgrades database systems and components.

The contractor shall provide the following availability management activities:

- Determine business unit availability requirements for new or enhanced service and formulating the availability and recovery design criteria for the database to ensure services are designed to deliver the appropriate levels of availability
- Determine the critical business functions and impact arising from database component failure. Where appropriate, reviewing the availability design criteria to provide additional resilience to prevent or minimize impact to the business

- Identify opportunities to optimize the availability of databases to deliver cost effective improvements that deliver tangible business benefits
- Define the targets for availability, reliability and maintainability for the database and application server components that underpin the service and ensure these targets are documented and agreed upon within Service Level Requirements (SLRs), Operational Level Agreements (OLAs) and contracts
- Establish measurements and reporting of availability, reliability, and maintainability that reflect the business, stakeholder and IT support organization perspectives
- Monitor and trend analysis of the availability, reliability and maintainability of databases and database components
- Investigate the underlying reasons for unacceptable availability
- Produce and maintain a forward-looking Availability Plan that prioritizes and plans overall availability improvement

The contractor shall provide and implement the following under this subtask:

- Develop availability management policies and procedures and determine appropriate availability management tools and methods that support FAS Availability Management support requirements
- Provide unrestricted read access by FAS-authorized staff and designated personnel to all current and historical availability records and documentation
- Participate in user requirements gathering and analysis when new IT systems and services are being defined to ensure that all databases are designed to deliver the required levels of availability required by the business
- Create availability and recovery design criteria to be applied to new or enhanced database design
- Participate and cooperate with FAS in defining the availability SLR measures and reporting requirements
- Leverage contractor tools provided as a service and practices to measure and report on agreed-upon availability SLRs for new and enhanced database design and implementation
- Ensure that approved availability SLR measurement tools and practices are implemented
- Monitor and maintain an awareness of database advancements and best practices related to availability optimization and periodically provide updates to FAS IT management
- Ensure that all availability management improvement initiatives conform to defined Change Control procedures set forth in the Procedures Manual
- Conduct availability assessment review sessions and provide cost-justified improvement recommendations
- Coordinate with FAS and third-party service providers to gather information on databases and database tools around service availability issues and trends to be used for trend analysis
- Promote availability management awareness and understanding within the IT support organization

- Perform regular reviews of the availability management process and its associated techniques and methods to ensure that all of these are subjected to continuous improvement and remain fit for purpose

C.5.4.9   SUBTASK 9 - CAPACITY MANAGEMENT

The contractor shall perform capacity management services associated with ensuring that the capacity of the database environment matches the evolving demands of FAS business in the most cost-effective and timely manner. Capacity management encompasses the following:

- Monitoring of performance and throughput of databases, application servers, and supporting database components
- Understanding current demands and forecasting for future requirements
- Developing capacity plans which will meet demand and Service Level Requirements
- Conducting risk assessment of capacity recommendations
- Identifying financial impacts of capacity plans
- Undertaking database tuning activities

The contractor shall perform the following capacity management activities:

- Develop, document and maintain capacity management procedures in the Standards and Procedures Manual, that meet FAS requirements
- Establish a comprehensive Capacity Management planning process
- Define, develop and implement tools as a service that allow for the effective capacity monitoring/trending of databases and database components
- Continually monitor database and application server resource usage to enable proactive identification of capacity and performance issues
- Capture trending information and forecast future FAS capacity requirements based on FAS-defined thresholds
- Assess incidents/problems related to throughput performance
- Recommend changes to capacity to improve database and application server performance
- Maintain capacity levels to optimize use of existing resources and minimize FAS costs to deliver services at the agreed upon Service Level Requirements

C.5.4.10   SUBTASK 10 – PERFORMANCE MANAGEMENT

The contractor shall provide performance management services associated with tuning database components for optimal performance. The contractor shall monitor the various software components of the FAS database environment for availability and potential error conditions.

The contractor shall collect performance metrics and monitor the performance of critical components such as databases, and database tools for Availability / Uptime, Response Time, and End-to-end Throughput. The contractor shall report database and middleware availability, on a monthly basis. This includes Performance Analysis and Performance Reporting as stated below:

- *Performance Analysis* - The contractor shall analyze performance metrics collected by the automated monitoring agents to track usage and trends. The contractor shall provide recommendations to maintain or improve performance. Reporting metrics shall collect metrics from middleware components through to the database.
- *Performance Reporting* - The contractor shall prepare and submit a Performance Report that charts the actual performance of the GSA FAS database and middleware environment within the reporting period against specific thresholds. The report shall be provided monthly and also be available via a dashboard.

The contractor shall perform the following performance management activities:

- Develop, document, and maintain performance management procedures in the Standards and Procedures Manual, that meet FAS requirements
- Perform database tuning to maintain optimum performance in accordance with Change Management procedures
- Provide regular monitoring and reporting of database performance, utilization and efficiency
- Develop, deliver and implement improvement plans as required to meet service level requirements for performance

C.5.4.11   SUBTASK 11 – SERVICE LEVEL MONITORING AND REPORTING

The contractor shall provide service level monitoring and reporting services associated with the delivery database and database management Service Level Requirements. The contractor shall report database information (e.g., performance metrics) to the designated FAS TPOC and COR representatives in a format agreed to by FAS TPOC.

The contractor shall perform the following service level monitoring and reporting tasks:

- Develop, document and maintain service level monitoring and reporting procedures in the in an automated manner that meet FAS requirements and adhere to defined policies.
- Report on service level requirement performance and improvement results.
- Coordinate service level requirement monitoring and reporting with designated FAS representative.
- Measure, analyze and provide management reports on performance relative to service level requirements.
- Develop, deliver, and implement service level requirement improvement plans where appropriate.
- Provide FAS portal/dashboard access to performance and service level requirement reporting and monitoring system.

C.5.4.12   SUBTASK 12 – INCIDENT MANAGEMENT

The contractor shall provide incident management associated with restoring normal service operation as quickly as possible and minimizing the adverse impact on business operations of FAS, thus ensuring that the best possible levels of service quality and availability are maintained. While the incident management processes apply to level 1, level 2, and level 3 support groups, level 1 support is normally responsible for primary ownership of recording and tracking the incident and is responsible for the close coordination and ongoing monitoring and tracking of, and reporting on, Incidents that have been escalated to second-level and third-level support groups to ensure that escalated incidents are resolved as promptly as possible.

The contractor shall perform within the ITIL Version 3.0 framework and follow FAS procedures for changes and incidents affecting any FAS infrastructure.

The contractor shall provide the following incident management services:

- Incident detection and recording
- Incident classification and initial support
- Incident investigation and diagnosis
- Incident escalation
- Incident resolution and recovery
- Incident closure
- Incident ownership, monitoring, tracking, and communication

C.5.4.12.1   PROBLEM REPORTING/ESCALATION NOTIFICATION SERVICE

The contractor shall provide a mechanism that supports telephonic and electronic mail submissions from designated FAS employees and applications support contractors. Problems may be identified by the contractor, FAS third parties, or by other FAS and GSA Help Desks. The contractor and FAS shall jointly develop a problem ticket notification process supporting notification to and from the GSA National Help Desk. The contractor shall perform the following incident management tasks through the contractor's problem reporting solution:

- Establish criteria for incident management support requirements, including database and services to be covered, Incident Severity level definitions and characteristics, incident classification and prioritization schema, escalation requirements, etc.
- Develop incident management policies and procedures that support GSA FAS incident management support requirements
- Manage FAS problem management system ticket queues related to the infrastructure
- Provide, maintain, and manage an incident management system and knowledge database, including all hardware, software, databases, automated monitoring tools, and management and reporting tools, which are acceptable to FAS
- Maintain a KEDB (Known Error Database)
- Provide unrestricted read access by FAS-authorized staff and other personnel to all current and historical Incident records and knowledgebase data
- Monitor the incident management system for automatically generated and logged incident alerts

- Resolve Level 2 problems in accordance with the procedures manual, knowledge database documents, and configuration database(s)
- Identify and classify incident severity level characteristics and handle according to agreed-upon Incident response procedures
- Escalate incidents to the appropriate next-level service group within contractor, FAS, or third-party provider as soon as it is clear that the incident management technician is unable to resolve the incident without additional assistance, or as required, to comply with service level response times
- Track incident resolution progress through to final closure and record/update incident record status as appropriate
- Provide expert functional and process assistance for in-scope database services components at Level 2 or escalate to Level 3 resources as required
- Provide Level 2 and Level 3 support for Applications Software on the supported applications list
- Verify that all records (e.g., inventory, asset and configuration management records) are updated to reflect completed/resolved incident
- Document solutions to resolved incidents in central knowledgebase
- Accurately update all information pertinent to trouble ticket, including general verbiage, codes, et. al
- Notify designated FAS personnel of all Severity 1 and Severity 2 incidents
- Maintain contractor-owned current and historical records of all calls and the resolution of those calls for the life of the contract and provide reporting and trend capabilities
- For contractor-owned equipment that provides the service/solution, troubleshoot, diagnose and resolve incidents for all in-scope hardware and software warranty and non-warranty devices, including removing and/or repairing physically broken or inoperable devices
- For contractor-owned equipment that provides the service/solution, coordinate dispatch for all in-scope devices and repair as required
- Provide end-to-end incident identification, escalation and resolution management; and a closure process including those escalated to third parties
- Determine wherever possible whether an incident should be treated as a problem (e.g., whether preventive action may be necessary to avoid incident recurrence) and, in conjunction with the appropriate problem management group, raise a problem record to initiate action
- Track ongoing status of any problem records to ensure that identified problems are addressed and resolved
- Periodically review the status of Level 2 and Level 3 open, unresolved incidents and related problems and the progress being made in addressing problems
- Participate in problem management review sessions as appropriate
- Participate in incident review sessions

C.5.4.12.2   PROBLEM MANAGEMENT SERVICES

The contractor shall provide problem management services to minimize the adverse impact of incidents and problems on the FAS business and to prevent incident recurrence by determining the root cause(s) and taking action to correct the situation. The contractor shall provide reactive problem management services by diagnosing and solving problems in response to one or more

incidents that have been reported through incident management. The contractor shall also provide proactive problem management services to identify and solve problems and known errors before incidents occur. The contractor shall provide proactive problem management solutions to include performing predictive analysis activities, where practical, to identify potential future problems, develop recommended mitigation plans, and implement approved corrective mitigation actions and processes. The contractor shall maintain, update and disseminate information about problems and the appropriate workarounds and resolutions to ensure that the number and impact of incidents occurring within the FAS database environment is reduced over time. The contractor shall perform the following key tasks included in problem management:

- Problem control
- Error control
- Proactive prevention of problems
- Identifying trends that could result in incidents or problems
- Performing major problem reviews
- Providing problem management reporting

The contractor shall perform the following problem management services under this subtask:

- Adhere to problem management requirements and policies
- Provide data to problem management knowledgebase (Known Error Database) where information about problems, root cause, known errors, workarounds and problem resolution actions are recorded and tracked
- This knowledgebase may be the same knowledgebase as used by incident management
- Ensure problem management and resolution activities conform to defined change control procedures set forth in the procedures manual
- Coordinate with appropriate incident management teams and take ownership of problem management activities of all problems determined to reside in the contractor's service area of responsibility (e.g., detection, logging, Root Cause Analysis, et. al.)
- Ensure that recurring problems that meet defined criteria related to the contractor's database service responsibility area are reviewed using Root Cause Analysis processes
- Conduct proactive trend analysis of incidents and problems to identify recurring situations that are or may be indicative of future problems and points of failure
- Track and report on problems and trends or failures and identify associated consequences of problems
- Develop and recommend corrective actions or solutions to address recurring incidents and problems or failures, as well as mitigation strategies and actions to take to avert potential problems identified through trend analysis
- Identify, develop, document, and recommend appropriate workarounds for known errors of unresolved problems and notify incident management and all other appropriate stakeholders of availability if approved
- Provide status reports detailing the root cause of and procedure for correcting recurring problems and Severity 1 and Severity 2 incidents until closure as determined by FAS

- Participate in problem management review meetings and review and approve recommendations for actions, where appropriate
- Periodically review the state of open Incidents and related problems and the progress being made in addressing problems
- Create request for change documentation with recommended corrective actions to be taken to resolve a problem and submit to change management for review and approval
- Provide problem management reporting as required

C.5.4.13 SUBTASK 13 – CONFIGURATION MANAGEMENT

The contractor shall perform configuration management services associated with providing a logical model of the database services by identifying, controlling, maintaining and verifying installed hardware, software and related database tools. The goal of configuration management is to account for all database assets and configurations, provide accurate information on configurations and provide a sound basis for incident, problem, and change and release management and to verify configuration records against the infrastructure and correct any exceptions.

The Contractor shall propose, procure, implement, and maintain all needed automated tools and procedures, to implement a Configuration Management Database (CMDB) process in a cost effective manner. Expert knowledge of the proposed CMDB tool and vendor relationships shall be demonstrated by Contractor. At a minimum the tool shall provide the following features:

- Automated License management
- Patch management and automation
- Port enabling/disabling

If requested by GSA FAS, Contractor shall provide capabilities statements and demonstrations of the configuration management (CMDB) tool. The contractor will be responsible to perform the following configuration management tasks:

- Define Configuration Management requirements and policies
- Develop, document and maintain in the Standards and Procedures Manual Configuration Management procedures that meet requirements and adhere to defined policies
- Establish Configuration Management database, in accordance with GSA FAS requirements
- Select, install and maintain Configuration Management tools
- Enter/upload configuration data into configuration database
- Establish process interfaces to Incident and Problem Management, Change Management, technical support, maintenance and Asset management processes
- Establish appropriate authorization controls for modifying configuration items and verify compliance with Software licensing
- Establish guidelines for physical and logical separation between development, test and production environments and the process for deploying and back-out of configuration items
- Establish configuration Baselines as reference points for rebuilds, and provide ability to revert to stable configuration states

- Establish process for verifying the accuracy of configuration items, adherence to Configuration Management process and identifying process deficiencies
- Provide GSA FAS Configuration Management reports as required and defined by GSA FAS

C.5.4.14   SUBTASK 14 – CHANGE MANAGEMENT

The contractor shall provide change management services to include all activities to ensure that standardized methods and procedures are used for efficient and prompt handling of all changes. The goal of change management is to minimize the impact of change upon service quality and consequently to improve the day-to-day operations of the FAS systems. Change management covers all aspects of managing the introduction and implementation of changes affecting all management processes, tools, and methodologies designed and utilized to support the database services components. Change management processes are complementary to release management and configuration management, as well as incident management and problem management.

The contractor shall perform within the ITIL Version 3.0 framework and follow FAS procedures for changes and incidents affecting any FAS system. The contractor shall perform the following key change management tasks under this subtask:

- Request for Change (RFC) process
- Recording/Tracking process
- Prioritization process
- Responsibility assignment process
- Impact/Risk assessment process
- Establish and manage the schedule of approved changes
- Determine metrics for measuring effectiveness of a change
- Review / Approval process
- Implementation process
- Verification (test) process
- Closure process
- Participation with the Change Advisory Board (CAB)
- Participation in IT service continuity and disaster recovery planning
- Integrate with FAS change management policies, procedures, processes and training requirements per the change management process components outlined above, including Change Control Board (CCB) composition, activities and the financial, technical and business approval authorities appropriate to FAS IT and business requirements
- Receive and document all Requests for Change (RFC) and classify proposed changes to the Services, which shall include change cost, risk impact assessment, and system(s) security considerations
- Ensure that appropriate back-out plans are documented and in place in the event of systems failure as a result of the change
- Provide change management plan to FAS for review
- Develop and maintain a schedule of planned approved changes (Forward Schedule of Changes or FSC) and provide to FAS for review
- Determine change logistics

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- Provide change documentation as required, including proposed metrics as to how effectiveness of the change will be measured
- Participate in CCB meetings as FAS deems appropriate or necessary
- Oversee the approved change build, test, and implementation processes to ensure these activities are appropriately resourced and completed according to change schedule
- Ensure that thorough testing is performed prior to release and assess FAS business risk related to any change that is not fully tested prior to implementation. (Submit a test plan for FAS approval prior to the start of test)
- Monitor changes, perform change reviews and report results of changes, impacts, and change effectiveness metrics
- Verify that change met objectives based upon predetermined effectiveness metrics and determine follow-up actions to resolve situations where the change failed to meet objects
- Close out RFCs that met any successful met change objectives or changes that were abandoned

C.5.4.15 SUBTASK 15 – RELEASE MANAGEMENT

The contractor shall provide release management services that track changes to contractor-managed software and database components. Release management activities take a holistic view of a change to a service, including all aspects, technical and non-technical, software, hardware and network changes. These changes can be implemented by rolling out a combination of new applications, infrastructure software, upgraded or new hardware, or simply by making changes to the service hours or support arrangements. Release management processes and activities are complementary to those of change management, configuration management, and problem management. Releases typically consist of a number of problem fixes and enhancements to an existing service. A release consists of the new or changed software required and any new or changed hardware needed to implement the approved changes. Releases are generally divided into the following categories:

- Major software releases and hardware upgrades or replacements, normally containing large areas of new functionality. A major upgrade or release usually supersedes all preceding minor upgrades, releases, and emergency fixes
- Minor software releases and hardware upgrades, normally containing small enhancements and fixes, some of which may have already been issued as emergency fixes. A minor upgrade or release usually supersedes all preceding emergency fixes
- Emergency software and hardware fixes, normally containing the corrections to a small number of known problems

The contractor shall provide the following key release management services:

- Establish standardized release management policies and procedures for all databases and database activities
- Manage Release Planning and Scheduling for overall the release schedule, as well as individual Releases
- Release testing and testing management

- Rollout planning including quality plans and back-out plans
- Release communication, preparation, and training
- Manage the successful rollout/distribution and installation of all elements of a release
- Ensure that only correct, authorized, and tested versions are installed and that changes are traceable and secure
- Document each release and provide updates to the FAS CMDB
- Develop, manage, update and maintain formal release plans for each release in coordination with change management
- Provide release management plans and schedules to FAS for review
- For Contractor-owned equipment, conduct site surveys, as necessary, to assess existing hardware being used to validate release package requirements and dependencies
- Plan resource levels and requirements for supporting a release
- Ensure that any new software or support services required for the release are procured and available when needed
- For contractor-owned equipment, ensure that any new hardware required for the release is procured and available when needed
- Ensure that all necessary testing environments are available and properly configured to support release testing
- Schedule and conduct release management meetings to include review of planned Releases and results of changes made
- Identify and document all Configurable Items (CIs) that need to be included in the Release, as well as all system inter-dependencies
- Plan and manage the acceptance testing process for each release
- Review release management details and alter as appropriate to meet the needs of the FAS (e.g., back out plan, go/no go decision)
- Notify FAS affected applications "owners" of release timing and impact
- Conduct post-mortem of releases that necessitated implementation of the back-out plan and develop and implement appropriate corrective or follow-up actions to minimize future occurrences

C.5.4.16   SUBTASK 16 – PROVIDE CONTINUAL SERVICE IMPROVEMENT

The contractor shall provide continuous improvement consulting services to enable GSA FAS to reach new levels of performance while reducing costs. In partnership with FAS, the contractor shall recommend processes and technology improvements (tools, processes, methodologies, etc.) that will help create and maintain value for clients, stakeholders and end-users through the better design, introduction and operation of database services.

The contractor shall create Service Improvement Plans (SIPs) to identify improvements and establish a baseline as a benchmark for metrics. After approval by FAS or designee, the contractor shall implement support recommendations and track the progress by capturing metrics against projected improvement.

The contractor shall report on performance of implemented support improvements, issue reports on database performance, and identify possible product enhancement opportunities for improved

performance and potential cost savings. The contractor shall also record implemented improvements through the FAS approved change control process.

C.5.5 TASK 5 – DATABASE MODERNIZATION AND CONVERSION (Optional Task)

The contractor shall provide services to aid FAS OCIO in modernization and conversion planning and implementation. The contractor shall provide an architectural assessment of the GSA FAS infrastructure and prepare Technical Design Plans for the areas listed below. The estimated period of performance for these technical design plans starts Option Year 1. The contractor shall also provide implementation services, if the Government elects to implement the contractor's recommendation.

- Review and recommend strategies to provide high-availability for all database and middleware, especially for GSA Advantage.
- The contractor shall deliver a Technical Design Plan that discusses high-availability options for the GSA Advantage database and other databases as requested. The date of this deliverable shall be jointly negotiated.
- Review and recommend alternatives to transactional based replication. For instance, the contractor should review and recommend block-level replication strategies for databases, data warehouse and application servers, if appropriate.
- Review, assess and recommend alternative data warehousing strategies. Assess and evaluate data warehouse technologies and make recommendations. The contractor shall deliver a Technical Design Plan that discusses data warehousing options and migration strategies. The date of this deliverable shall be jointly negotiated.
- Implement new data warehouse technology and perform migrations from legacy data warehouse system to the new system Recommend and evaluate robust tools for converting data to the new system.
- Recommend, assess and implement high-availability for FAS's Oracle infrastructure. The assessment should include Oracle RAC. The date of this deliverable shall be jointly negotiated.

Task 5 will entail individual project requests for modernization initiatives or technology migrations originating from the FAS OCIO during the task order period of performance. Specifically, the Government has created CLIN X002 to handle potential requests such as planning for Database as a Service (DaaS) adoption or transition from Sybase to Oracle. As new projects formulate, the Government will request a cost and schedule estimate from the Contractor based on the project's scope. The Government has provided a ceiling amount for the fulfillment of this work and may incrementally fund the CLINs as necessary. Once projects are approved for analysis or implementation, the Contractor shall track and report cost, schedule and performance progress until completion of the effort utilizing a Government-approved project plan.

C.5.5.1   SUBTASK 1 - PROVIDE DATABASE MODERNIZATION PLANNING AND IMPLEMENTATION

If this task is exercised, the contractor shall provide alternate methods of delivery for its database services reflecting the current and future market capabilities for database management.

As part of this effort, the contractor shall provide GSA with opportunities that have been tested and proven in the marketplace reflecting innovation, cost reduction, and the creation of business capabilities through emerging trends in data management.

Key Personnel, shall work collaboratively with GSA evaluating avenues to transform the way IT delivers services by extending the enterprise beyond the traditional datacenter. These capabilities shall include innovative opportunities such as Platform as a Service (PaaS). PaaS shall include but is not limited to:

- Database services in the cloud,
- Application Services in the cloud,
- Web services in the cloud, and/or
- Integration middleware as a service

To ensure innovation, the contractor shall identify relevant technologies and capabilities proven in the market place that have the positive potential for FAS services. FAS anticipates using the innovative approaches described above to be initially deployed for non-mission critical databases (i.e. MySQL and MSSQL). As these technologies and innovations mature, GSA FAS will consider their use for core/mission critical applications. The contractor shall provide a service offering such as Cloud Computing that is capable of supporting these technologies. This service offering must have an ATO for systems classified as moderate. The contractor shall evaluate, research and provide recommendations on optional solutions such as non-RDBMS alternatives (i.e. Hadoop, HPCC, etc.), cloud computing, NoSQL database, etc. If the recommendations are approved by the Government, the contractor shall design, install, configure, and create (or convert) current system(s)/model(s) to the new solutions. If implemented, the contractor shall maintain, troubleshoot, tune, and perform backup and recovery for the new solutions.

As part of solutions proposed during the task order, the contractor shall provide an overview of its approach, providing details of its experience with the technologies and innovative approaches. Critical successful factors must be provided.

C.5.5.2   SUBTASK 2 – PROVIDE DATABASE CONVERSION PLANNING AND IMPLEMENTATION

As part of the overall database environment modernization improvement effort, GSA FAS may undertake a database platform migration from one DBMS to another (e.g. Sybase to Oracle, Sybase to My SQL, My SQL to MSSQL, etc). As part of this process, the contractor shall provide the following services:

- Expertise to fully design the migration procedures and approach,
- Develop the architecture of the target DBMS,

- Develop a pilot/proof of concept,
- Fully manage the approved upon migration process,
- Implement the migration plan and fully test the DBMS conversion,
- Provide Quality Assurance (QA) services for all migration activities, and
- Recommend and provide necessary tools for all migration activities.

If this optional task is executed, the contractor shall provide the database migration approach and methodology, tools and personnel to manage the conversion process.

As a part of solutions proposed during the task order, the contractor should provide an overview of its approach to database platform migration, provide details of its experience with database platform migration and critical success factors needed to ensure successful migration.